

REMARKS/ARGUMENTS

Re-examination and favorable reconsideration in light of the above amendments and the following comments are respectfully requested.

Claims 26 - 44 are pending in the application. Currently, all claims stand rejected.

By the present amendment, claims 26, 27, 32, 34, 41, 43, and 44 have been amended; claim 33 has been cancelled; and new claim 45 has been added to the application. Claim 27 has been amended to correct the grammar and not for reasons relating to patentability.

In the office action mailed April 30, 2008, claims 26 - 34, 41, and 43 - 44 were rejected under 35 U.S.C. 112, first paragraph as failing to comply with the written description requirement; claims 35 - 38 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,624,721 to Strangman; claims 35 - 38 and 42 - 43, were rejected under 35 U.S.C. 103(a) as being unpatentable over Strangman; claims 39 - 41 were rejected under 35 as being unpatentable over Strangman in view of European Patent Document No. 1327698 to Movchan et al.; and claims 26 - 34 were rejected under 35 U.S.C. 103(a) as being unpatentable over Strangman in view of Movchan et al. and U.S. Patent Publication No. 2002/0172837 to Allen et al.

The foregoing rejections are traversed by the instant response.

With respect to the rejection of claims 26 - 34, 41, and 43 - 44 under 35 U.S.C. 112, first paragraph, the rejection is in error. Original claim 1 in the application called for a method which included the steps of depositing a mixture comprising a TBC matrix and a fugitive material

upon a part to form a layer; and heating said layer at a temperature and for a duration sufficient to liberate a portion of said fugitive material to form a porous network. Original claim 12 read as follows:

"The method of claim 1 comprising the additional step of depositing at least one layer of a TBC mixture substantially free of any fugitive material."

It should be noted that the claim uses the phrase "additional step". This more than ample basis to support the phrase "subsequent to formation of the porous network" since as claimed it occurs subsequent to said heating step. That is the only reasonable interpretation of the words "additional step" in claim 12. It should not go unnoticed that there is no need to heat the "at least one layer of a TBC mixture" since it is substantially free of any fugitive material.

Still further, the original specification, in paragraph 0023, talks about "[i]n addition, a coating deposition program was followed to provide initial and final application of dense (i.e. "substantially pure") 7YSZ to promote adherence and erosion resistance. In order to have a final 7YSZ layer, deposition of the final layer has to occur after the evaporating step. One of ordinary skill in the art reading the specification as originally written would understand that.

Thus, in Applicants' opinion, there is ample support in the original written description, which includes the claims, for the language of claims 26 and 44. In any event, the rejection is no longer applicable to claim 26

since the phrase "subsequent to formation of the porous network" has been deleted from the claim.

With respect to the objections to claims 32, 34, 41, and 43, these objections are now moot in view of the claim amendments. The claims parallel the language of the specification and ample support for the claim language can be found in the drawings and in paragraphs 0018 and 0026 of the specification. It should be recalled that the exact language of the claims does not need to be found in the specification.

The rejection of claims 35 - 38 on anticipation grounds over Strangman should be withdrawn. In order to anticipate a claim, a reference must disclose, either explicitly or inherently, each and every limitation set forth in the claim. Since the Examiner has not set forth an inherency argument, then the Examiner must be relying upon the explicit disclosure portion of the law of anticipation. Strangman does not disclose each and every limitation of claim 35.

The claim 35 calls for evaporating a source of a thermal barrier coating matrix material and a source of a fugitive material. The claim then goes on to call for co-depositing said thermal barrier coating matrix material and said fugitive material which "*co-depositing*" step comprises altering a rate at which said thermal barrier coating matrix "*and*" said fugitive material are deposited to form said layer with different levels of *fugitive material in said thermal barrier coating matrix material.*" The claim then goes on to claim the step of "forming a graded porous network in said layer by heating said layer of said co-deposited thermal barrier coating matrix material and

said fugitive material with said different levels of fugitive material at a temperature and for a duration sufficient to liberate a portion of said fugitive material *"in each said level."*

The Examiner in applying Strangman takes the position that the language of claim 35 does not necessitate positive deposition of fugitive material in all levels. This position is simply wrong. Claim 35 throughout talks about co-deposition of the thermal barrier coating matrix material and the fugitive material. There is not a single limitation in claim 35 which talks about depositing only a thermal barrier coating matrix material at any level. All the deposition steps are clearly co-deposition steps. Further, and most significantly, the very end of claim 35 says that a portion of the fugitive material in each said level is liberated. The only way there is a fugitive material in each said level is if there is positive deposition of the fugitive material. In order to determine whether a reference anticipates a claim, the Examiner must first properly construe the claim. The Examiner has not done this. When a proper construction is applied, it can be clearly seen that Strangman does not anticipate, or render obvious, the claimed invention. There is simply no disclosure, suggestion, or teaching in Strangman of co-depositing different levels of fugitive materials in said thermal barrier coating matrix material by altering a rate at which the thermal barrier coating matrix material and the fugitive material are deposited and forming a gradated porous network by liberating a portion of said fugitive material in each said level. There is absolutely no disclosure in Strangman that the noble metal layer is co-

deposited with a fugitive material. In fact, Strangman only talks about depositing the noble metal. Therefore, this can not form any basis for the claimed subject matter or render it obvious. The Examiner's interpretations of the reference are duly noted; however, they are the Examiner's interpretations and can not form the basis of a rejection since the rejection must be based upon the perception of one of ordinary skill in the art. For these reasons, claim 35 is allowable over Strangman.

Claims 36 - 38, 42, and 43 are allowable for the same reasons as claim 35, as well as on their own accord. Claim 43 is patentable because there is no disclosure in Strangman of evaporating at least 90% of the deposited fugitive material. There is a significance to evaporating this much fugitive material which Strangman does not recognize. Namely, that by reducing this much fugitive material, one reduces the weight of the coating and the thermal conductivity to half of that of a YSZ coating. Since there is nothing which teaches or suggests the advantages which are obtained, this subject matter is not obvious to one of ordinary skill in the art.

With respect to the rejection of claims 39 - 41 over Strangman in view of Movchan et al., the Movchan et al. reference does not cure the aforementioned deficiencies of Strangman. Thus, claims 39 - 41 are allowable for the same reasons as claimed 35 as well as on their own accord.

With respect to the rejection of claim 26 on obviousness grounds over the combination of Strangman in view of Movchan et al. and Allen et al., this rejection fails for the following reason. Claim 26 calls for the step of "depositing a final layer of a thermal barrier

coating ceramic material only onto said layer containing said porous network to promote thermal barrier coating erosion resistance." The final layer deposited by Strangman is the deposition of a noble metal, not a thermal barrier coating ceramic material. In Strangman, the noble metal layer is deposited to increase the reflectivity of the pores and to form intermetallic particles with the tungsten and molybdenum. In column 4, lines 48 - 52, Strangman speaks about the advantages and the reasons for depositing the noble metal layer. One of ordinary skill in the art would recognize that one could not replace the outer layer 30 of Strangman by a ceramic thermal barrier coating material without losing the reflectivity and the desired coating of the pores. Thus, one of ordinary skill in the art would not combine Strangman with the teachings of Movchan et al. and Allen et al. as suggested by the Examiner. The mere fact that one could make a substitution is not sufficient basis for finding the substitution to be obvious, particularly where the reference being modified would lose one of its important features.

Claims 27 - 32 and 34 are allowable for the same reasons as claim 26 as well as on their own accord.

New claim 45 is allowable because Strangman would not want an outer or final layer which is formed from a yttria stabilized zirconia or alumina.

For the foregoing reasons, the instant application is believed to be in condition for allowance. Such allowance is respectfully solicited.

Should the Examiner believe an additional amendment is needed to place the case in condition for allowance, the

Examiner is hereby invited to contact Applicants' attorney at the telephone number listed below.

The instant amendment should be entered since it does not raise any new issue which requires further consideration and/or search by the Examiner. Still further, it does not raise any issue of new matter and it does reduce the issues for appeal.

A notice of appeal is appended hereto in the event that the Examiner maintains the rejections of record.

The Director is hereby authorized to charge the notice of appeal fee of \$510.00 to Deposit Account No. 21-0279.

If the Director determines that an additional fee is due, he is hereby authorized to charge said fee to said Deposit Account.

Respectfully submitted,

Nicholas E. Ulion

By /Barry L. Kelmachter #29999/
Barry L. Kelmachter
BACHMAN & LaPOINTE, P.C.
Reg. No. 29,999
Attorney for Applicants

Telephone: (203)777-6628 ext. 112
Telefax: (203)865-0297
Email: docket@bachlap.com

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